



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
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PATENTS AND TRADEMARKS
Washington, D.C. 20231

**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Paper No. 52

Application Number: 08/818,289

MAILED

Filing Date: 03/14/97

SEP 09 1998

Appellant(s): Edward W. Stark

GROUP 2500

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For Appellant

EXAMINER'S ANSWER

This is in response to appellant's brief on appeal filed 2 July 1998.

(1) *Real Party in Interest*

A statement identifying the real party in interest is contained in the brief.

(2) *Related Appeals and Interferences*

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) *Status of Claims*

The statement of the status of the claims contained in the brief is correct as indicated in the final rejection. However, the final rejection contained an error; the removal of the Hirao et al reference also overcame the rejection of claims 34 and 42. Note that in the rejection just prior to the final rejection, when Hirao et al had not yet been removed, Hirao et al was the only reference cited against the specific subject matter of these claims. Thus claims 34 and 42 were also overcome by the removal of the Hirao et al reference, but are objected to as being dependent upon unallowed parent claims. Any inconvenience or confusion caused by this error is regretted.

(4) *Status of Amendments After Final*

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) *Summary of Invention*

The summary of invention contained in the brief is correct.

(6) *Issues*

The appellant's statement of the issues in the brief is correct.

(7) *Grouping of Claims*

Appellant's brief includes a statement that claims 1, 7, 33 and 36, 34 and 42, 37 and 38, and 39 and 40 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8). Note the indication of allowability of the subject matter of claims 34 and 42 above.

(8) *ClaimsAppealed*

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) *Prior Art of Record*

The following is a listing of the prior art of record relied upon in the rejection of claims under appeal.

The prior art discussed on pages 2-4 of the instant specification

4,884,891	BORSBOOM	12-1989
3,994,602	HOWARTH	11-1976

(10) *Grounds of Rejection*

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1, 7, 33, and 36-40 are rejected under 35 U.S.C. 103(a). This rejection is set forth in prior Office action, Paper No. 49. However, note that the listing of rejected claims in that rejection mistakenly listed claims 34 and 42 as rejected rather than listing them in section 4 of that action with the claims for which the rejection had been overcome by the removal of Hirao et al as a reference.

(11) *Response to Argument*

The brief on appeal, page 12, argues that the limitation that "...at least that one of said surface areas of each of said paths being extended in length at substantially constant spacing from the other surface of each of said paths" [emphasis on brief] is "at least one critical aspect of the invention as claimed is not taught or suggested by the references". This allegation that this feature is not taught by the references is simply wrong. The references clearly show this. The instant specification, page 3, states that in the prior art that "[t]ypically, uniform geometric spacing between the source area and the detection area is provided by using a central aperture surrounded a small distance away by a ring aperture." The brief acknowledges that such a central aperture and a surrounding ring aperture meets this limitation of "at substantially constant spacing from the other surface"; the brief, page 12, states that "[t]his is most easily effected by having one of the surface areas present at the center of a concentric succession of rings of surface areas". Thus, rather than being "not taught or suggested by the

references, this argued limitation is acknowledged prior art. In addition to being acknowledged in the instant specification as prior art; this central aperture and surrounding ring apertures is taught by Borsboom. Note figures 3 and 4, which like the admitted prior art, shows a central area (2) surrounded by a surrounding ring-shaped area (7) which is both "extended in length" and "at substantially constant spacing from the other surface" as claimed. Thus, far from being "not taught of suggested by the references"; the argued feature is acknowledged prior art that is also taught by the Borsboom reference.

On page 13, line 7 through page 15, line 8 the brief argues that the embodiment of figures 3 and 4 of Borsboom by itself does not meet all of the limitations of the claims on appeal. This is, of course, quite true. It is also, of course, quite irrelevant; the rejection is in no manner premised upon any allegation or belief that the embodiment of figures 3 and 4 of Borsboom could have been properly applied under 35 U.S.C. 102(b). The rejection is under 35 U.S.C. 103(a), not under 35 U.S.C. 102(b), and is over a combination of references, not over Borsboom alone.

The argument on page 13, lines 8-17 that the particular embodiment of figures 3 and 4 of the Borsboom reference does not show "a plurality of different transmission paths...defining each of said paths by corresponding and separated surface areas on said materials" [emphasis in brief]. This argument ignores the teaching of the Borsboom reference as a whole.

Borsboom, in column 3 beginning on line 61 and running through column 4, line 1, teaches

"...a sensor head could be made in which a large number of juxtaposed optical fibers of diameter d is *arranged concentrically around a central optical fiber with an increasing radius*. Measurements made with such a sensor head gives a good picture of the amount of reflected light that has entered the *fibres arranged concentrically in rings*, and hence of *the light reflection as a function of the distance from the light beamed into the material being investigated...*" (emphasis added).

Thus Borsboom does teach, in addition to the embodiment shown in his figures 3 and 4, a plurality of rings surrounding the central area to allow measurement "as a function of distance from the light beamed into the material". This argument also ignores the Howarth reference, which clearly teaches "a plurality of different transmission paths...defining each of the paths by corresponding and separated surface areas" on the material being measured; in figure 7, the light path from the source to D1 and the light path from the source to D2 are "a plurality of different transmission paths" and each is defined "by corresponding and separated areas" (the areas at 61 and 62).

On page 13, line 17 through page 14, line 16, it is argued because the central illuminating area of Borsboom is an optical fiber bundle then the "substantially constant spacing" limitation of the claims is not met. It is inherent in all such arrangements that the central area actually be an area, and not a mathematical point. Thus this argument that the "spacing between the central fibers and exterior fibers is clearly eccentric" can be applied equally to all arrangements, since any actual, realizable arrangement will be "eccentric" to some manner. This argument clearly goes well beyond the instant disclosure and claims; there

is no disclosure to support any claim or an argument as to how "eccentric" the central area can be and still not be "substantially constant spacing". Even were there support in the specification of arguing that the spacing of Borsboom is not "substantially constant spacing", this argument also ignores that fact that applicant has acknowledged in the instant specification, page 3, lines 17-19, that in the art "typically" there is provided "*uniform* geometric spacing between the source area and the detection area" [emphasis added]. There does not appear to be any difference between the "substantially constant spacing" of the claim and the "uniform geometric spacing" of the acknowledged prior art. Thus the brief is simply wrong when it argues that there is no teaching of "constant spacing" between the illumination and receiving areas; not only is it taught, it is acknowledged as "typical".

The brief, on page 14, line 17 through page 15, line 13, discusses the limitation that "the total length of said extended surface area of each of said paths being substantially greater than the mean distance separating said corresponding and separated surface areas defining each of said paths". The discussion finds a particular comment in the Borsboom reference that the apparatus of that reference comprises "at least one solid optical illuminating fibre and at least one juxtaposed optical detection fibre and argues that "[o]ne juxtaposed optical fiber cannot form 'the extended surface area' of Applicant's claim". This argument simply ignores the clear teaching of Borsboom and of the acknowledged prior art of using ring-shaped areas surrounding a central area. Simple geometry guarantees that a ring shaped area surrounding a central area will have a total length substantially greater than the mean distance separating the

separated surface areas; the length of such a ring shaped area will be substantially 2π (~ 6.28) times its radius; as the mean distance separating any ring area from a centrally located area will be at least approximately equal to the radius of the ring, the length of the extended area will be at least approximately 6.28 times the mean distance separating the areas. Thus the limitation is taught by the references because it is inherent in the geometry of the arrangement of the prior art of record.

On page 15 of the brief, it is noted that claim 1 sets forth "sensing a plurality of independent signals developed at the same time or rapid sequence representing optical information obtained from a spectrum related to the analytes and interferences within the material". As was pointed out in the final rejection, and passage of light through the material of the sample will inherently and necessarily "represent optical information obtained from a spectrum related to the analytes and interferences within the material" since all light passing through the material will necessarily be affected by such factors, and these factors are, in general, wavelength dependent. The claims do not claim actually obtaining wavelength or spectrum information; they call only for "sensing a plurality of independent signals . . . *representing* optical information obtained from a spectrum . . . ". The "independent signals" are the signals at different distances measured through the differently spaced rings. The claims do not call for the use of a spectrometer or other means for obtaining such wavelength dependent information, but only for sensing "signals" which *represent* this information. The brief argues that actually obtaining this type of wavelength information is known in the art,

and apparently that, since it is known in the art, that the instant claim language must somehow require it. However, the entire discussion bridging pages 15 and 16 do not argue from claim language, but rather from admitted prior art. The brief wished to read too much into the word "sensing".

However, whether or not this argued material is claimed broadly enough to read on the use of a monochromator or filters as does Borsboom (column 5, lines 6-9; brief; page 16, line 23-25) or, as argued by the brief, multiple wavelengths (brief, page 16, line 21), the brief is inconsistent with the allowability of claims based upon such subject matter. The brief clearly argues that the use of such spectra-detecting means such as spectrometers is known in the prior art. The brief, page 15, lines 24-26 clearly states that "[t]he sensing of signals representing optical information obtained from a spectrum . . . is known in the art, as described, for example, in the Norris reference of record" (the Norris reference of record is, of course, the prior art discussed in the specification and applied as a part of the rejection; see the instant specification, page 2, lines 28-31). Thus, even were the argument that the "sensing" of the claims goes beyond the sensing of the Borsboom reference, the acknowledged fact that this material is in fact known in the art is sufficient to demonstrate that this material, by itself, cannot bring patentability to the claims, since doing what the prior art does is not patentable.

On pages 17 through 21, the brief argues that Borsboom does not teach processing and combining the signals in accordance with appropriate chemometric modeling techniques and

determination of model parameters during the calibration process to determine qualitative or quantitative characteristics of the material".

It is clear that Borsboom is used for, and is intended to be used for, wavelength dependent measurements of materials. The arrangement is referred to as a "colorimeter" (column 5, line 40; column 6, line 24) and is taught to be able to include a monochromator or a filter or some sort (column 5, line 6). Further, it can be calibrated through the use of a spectrophotometer (column 6, line 10). Thus Borsboom at least suggests the use of such a probe for spectral-based measurements.

Additionally, it is acknowledged in the brief that for such interactance measurements as of particular interest here, the use of wavelength sensitive measurements is prior art, including in the system of the prior art of the specification in which there is a central area and a surrounding ring-shaped area.

Since it is known and would have been obvious to obtain such wavelength-dependent measurements, it would have been obvious to use appropriate mathematical models to understand the obtained data. The suggestion that those in the prior art would obtain such information and do nothing with it is not reasonable.

Note also that the instant specification does not set forth in any detail what such "appropriate chemometric modeling techniques" are, or how one might go about obtaining a "determination of model parameters" except for "simplest cases" (specification, page 9, line 9). The specification clearly sets forth, and intends to set forth, much broader modeling. On page 9 lines 7, for instance, the specification sets forth the use of a undisclosed "linear or

nonlinear model", and lines 30-35 states that the invention "contemplates use of other linear and nonlinear chemometric models". Clearly the specification is based upon a belief that those in the art know about such modeling such that setting forth the models in detail is not necessary for complete disclosure; a sentiment that the Examiner agrees with. It is, however, further evidence that those in the art knew of and would have found the use of such models obvious.

In the paragraph bridging pages 21 and 22 of the brief; it is argued that claim 7 requires that "...at least one of said surface areas of each of said transmission paths being substantially constantly spaced from its corresponding surface area..." [emphasis in brief], which ,It is argued, is "even more restrictive and delimiting than claim 1". However, claim 1 calls for "... at least one said surface areas of each of said paths being extended in length at substantially constant spacing from the other surface area of said paths . . ." [emphasis added]. It is not understood how "substantially constantly spaced" is "even more restrictive and delimiting" than is "substantially constant spacing"; the two are identical in scope.

Page 22 of the brief argues that "[w]ithout any teaching or inherent existence of this limitation . . . "; however, the brief ignores that fact that this argued constant spacing it explicitly taught by both the acknowledged prior art and by the Borsboom reference; see the discussion above which points out that both show paths with ring-shapes areas surrounding a central area, and thus show this substantially constantly spaced relationship of the claims.

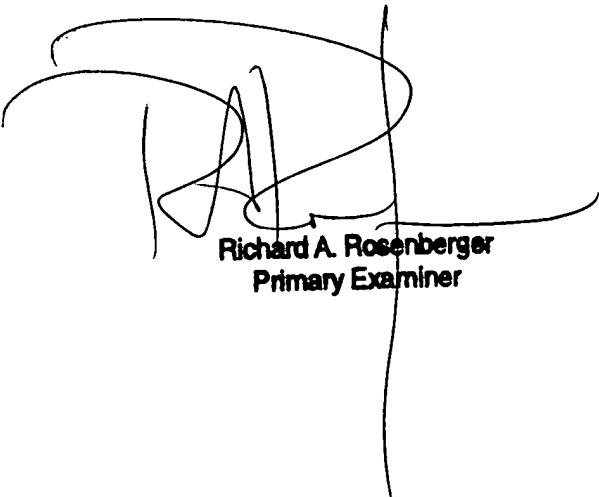
Pages 22 and 23 of the brief argue that claims 33 and 36 claim “processing and combining said signals in accordance with appropriate chemometric modeling techniques to determine qualitative or quantitative characteristics of the material”. This limitation has been treated above with respect to the same limitation in claim 1, that is, the limitation “processing and combining said signals in accordance with appropriate chemometric modeling techniques . . . to determine quantitative and quantitative characteristics of the material”. There does not appear to be any argues feature of claims 33 and 36 which are not also found in claim 1.

The art teaches or at least clearly suggests the concentric arrangement of claim 38; Borsboom, in column 3, lines 61-63, talks of “a large number of juxtaposed optical fibres of diameter d arranged *concentrically* around a central optical fibre with an increasing radius” [emphasis added]. The parallel arrangement of claim 37 is also known in the art; the acknowledged prior art in the specification discusses that a known “alternative structure has been to use equally parallel slit apertures . . .”; see the specification, page 3, lines 26-27.

The argues limitation of claims 39 and 40, that the at least two paths have a common surface area is clearly taught by the Borsboom reference; that reference, in column 3, lines 61-63, discloses “a large number of juxtaposed optical fibres of diameter d arranged concentrically around a central optical fibre with an increasing radius; the “central optical fiber” is an area common to all of the paths defined by that structure.

(12) Conclusion

For the reasons of the final rejection and those given above, it is believed that the rejection of claims 1, 7, 33 and 36-40 under 35 U.S.C. 103 (a) is proper, IT is therefor respectfully requested that the rejection be affirmed



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September 8, 1998